

A NEW PERUVIAN *STYLOCERAS* (BUXACEAE): DISCOVERY OF A PHYTOGEOGRAPHICAL MISSING LINK¹

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ABSTRACT

A new species of *Styloceras* (Buxaceae), *S. brokawii* A. Gentry & R. Foster, is described from lowland Amazonian Peru. This is the first non-Andean species of the genus and provides significant new phytogeographical evidence as to the origins of this remarkable and isolated genus.

Styloceras brokawii A. Gentry & R. Foster, sp. nov.—FIG. 1.

Frutex dioecius. Folia alterna elliptica, acuta vel breviacuminata, ad basim acuta. Inflorescentia masculina spica axillaris, gracilis, floribus solitariis, distantibus, bracteatis, sessilibus, antheris ca. 14, sessilibus. Flores feminei solitarii, pedicellati, calyce 4–5-lobato, ovario puberulo, stigmatibus 2(–3) magnis. Fructus globosus, stigmatibus persistentibus.

Dioecious (rarely monoecious) shrub 2–6 m tall; branchlets angulate when young, becoming subterete, glabrous, striate. Leaves alternate, elliptic, the apex acute to short acuminate, acute to abruptly attenuate at the base, (7–)10–20 cm long, (3.5–)5–9(–10) cm wide, entire, somewhat 3-veined from above the base, 4–5 secondary nerves on each side, these plane above and prominulous below, tertiary veins obscure, glabrous, the petiole 1–3 cm long. Male inflorescence, axillary, pendant, spicate, slender, 2–6 cm long, the flowers rather distant, each flower subtended by a ciliate-margined ovate bract ca. 1 mm long, the flowers sessile, the anthers ca. 14, sessile, bilocular, 1.5–2 mm long, slightly curved. Female flowers solitary, pedicellate, the pedicel 7–9 mm long, glabrous, with several very inconspicuous minute bracts near the base, the calyx 4–5-lobed, the lobes triangular, reflexed, the corolla absent, the ovary subsessile, truncate, 2-parted, minutely puberulous, the apex prolonged into 2 (rarely 3) large divergent stigmas over 1 cm long, the tips recurved, yellow when fresh, the base of the stigmas slightly contracted into the ca. 2 mm long style. Fruit globose, fleshy, yellow, 2–3 cm in diameter, the 2 stigmas persistent as 2 subapical horns 1.8–2 cm long, their bases separated by 1–2 cm, tardily dehiscent to expose gelatinous material surrounding 2–3 dark blue seeds.

TYPE: PERU. MADRE DE DIOS: Prov. Manu, forest behind Manu settlement, 350 m alt, shrub 3–5 m, male catkins white, dioecious, 4 Aug. 1973, R. Foster, H. Brokaw & N. Brokaw 2474 (MO, holotype; F, isotype).

Additional Collections Examined: PERU. MADRE DE DIOS: in forest behind Manu settlement, 4 Aug. 1973, Foster et al. 2471 (F, MO). Shintuya, forest 1 km up small stream from Río Madre de Dios, 8 Aug. 1974, Foster et al. 3118 (F). Río Alto Madre de Dios, halfway between Shintuya and Manu settlements, forest near chacra of Sr. Carpio, 10–11 Aug. 1974, Foster et al. 3229 (F), 3249

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FIGURE 1. *Styloceras brokawii* A. Gentry & R. Foster. Fruit and female flowers (*Gentry et al.* 27222).

(F). Parque Nacional del Manu, Río Manu, vicinity of Cocha Cashu Biological Station, 14 Sep. 1976, *Foster & Russell* 5035 (F). Río Palotoa, tributary of Alto Madre de Dios, NW of Shintuya, called Río Pantiacolla on maps, 500 m, 26 Aug. 1978, *Foster & Terborgh* 6712 (F). Cocha Cashu Camp, Manu National Park, trails 4, 5, and 9, 380 m, 21 Oct. 1979, *Gentry et al.* 27070 (AMAZ, F, MO, USM). Across river from Cocha Cashu camp, Manu Park, 380–420 m, 23 Oct. 1979, *Gentry et al.* 27185 (MO, USM), 27221 (MO, USM), 27222 (AMAZ, F, MO, USM).

The known range of *S. brokawii* is between 350 and 600 m in the shade of closed seasonally inundated forest and noninundated upland forest. It seems most abundant in intermediate areas of alluvial soil subject to rare inundations. At the type locality this species is abundant with up to 10–30 individuals per hectare. In other collection sites, individuals were at densities of one or less per hectare. Its peak of reproductive activity occurs during the drier months of July, August, and September when the forest is partially deciduous. Most full-size individuals were in reproductive condition at the time of collection, but plants in bud and with ripe fruit could be found at the same time. There appeared to be more male than female plants, and females were usually larger. One collection (*Gentry et al.* 27222) has a female flower at the base of the predominantly male inflorescence.

This species is named in honor of Howard P. Brokaw who found the plants from which the first specimens were made and in recognition of the contributions of him and his family to the cause of biological conservation in the neotropics.

There are only three accepted species of the remarkable and isolated genus *Styloceras* which is sometimes recognized as constituting a distinct family (Airy Shaw, 1966). *Styloceras brokawii* is most similar to *S. laurifolium* (Willd.) H.B.K. which ranges from central Peru to the Colombian and Venezuelan Andes. That species differs in a denser male inflorescence, glabrous ovary, and thicker

leaves with more prominent venation. *Styloceras kunthianum* Juss. of the upper Pastaza valley in Ecuador, which was erroneously synonymized with *S. laurifolium* in the *Flora of Peru*, differs in being monoecious with much shorter inflorescences. *Styloceras columnare* Müll.-Arg. of the Soratá area of Bolivia differs most notably in having the styles united into a basal column.

Styloceras is phytogeographically, as well as taxonomically, problematical, and *S. brokawii* provides important new phytogeographical insight. Buxaceae is an ancient, basically Laurasian group, and *Styloceras* is the only South American genus (one West Indian species of *Buxus* also reaches the Venezuelan coastal cordillera). Citing the traditional grouping of *Styloceras* and African *Notobuxus* (now usually merged with *Buxus*, Gentry, 1978) as tribe Stylocereae, Raven & Axelrod (1974) suggest that nevertheless the family already may have been present in West Gondwanaland in the Cretaceous when more or less direct migration between Africa and South America was still possible. All of the other species of *Styloceras* are found at much higher elevations and the restriction of such a putatively old and archaic genus as *Styloceras* to the geologically young Andes has seemed anomalous. The new species is the first non-Andean *Styloceras*, suggesting a possible reinterpretation of the genus as an old tropical lowland forest one which successfully invaded the upper slopes of the Andes relatively recently. This interpretation is also supported by arrival of *Styloceras* in the palynological record of the Colombian Cordillera Oriental only about 1.2 million years ago (van der Hammen, 1974), well after the establishment of suitable montane habitat in that region. On the basis of its phytogeography we predict that *S. brokawii* will prove the least advanced member of *Styloceras*, a prediction which would be borne out if contraction of the inflorescence and fusion of the style bases prove to be specialized characters as would be expected.

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